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UNDERLYING PERSONALITY DIFFERENCES BETWEEN ALCOHOL/SUBSTANCE-USE DISORDER PATIENTS WITH AND WITHOUT AN AFFECTIVE DISORDER

DAVID S. JANOWSKY*, LIYI HONG, SHIRLEY MORTER and LAURA HOWE

Department of Psychiatry, CB#7175, School of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-7175, USA

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Abstract — The Myers–Briggs Type Indicator (MBTI), a popular personality test, was used to profile the personalities of in-patient alcoholics/substance-use disorder patients who had, and those who did not have, a concurrent affective disorder diagnosis. The MBTI divides individuals into eight categories: Extroverts and Introverts, Sensors and Intuitives, Thinkers and Feelers, and Judgers and Perceivers. Alcohol/substance-use disorder patients with no affective disorder differed from a normative population only in being significantly more often Sensing and significantly less often Intuitive single-factor types. The Extroverted/Sensing/Feeling/Judging four-factor type was also significantly over-represented in this group, compared to a normative population. In contrast, mood-disordered alcohol/substance-use disorder patients were significantly more often Introverted, Sensing, Feeling, and Perceiving and significantly less often Extroverted, Intuitive, Thinking, and Judging single-factor types. They were also significantly more often Introverted/Sensing/Feeling/Perceiving and Introverted/Intuitive/Feeling/Perceiving four-factor types. 'Pure' alcohol/substance-use disorder patients differed from alcohol/substance-use disorder patients with a mood disorder in that they were significantly more often Extroverted and Thinking and significantly less often Introverted and Feeling single-factor types; and significantly less often were an Introverted/Sensing/Feeling/Perceiving four-factor type. The above results may have psychogenetic, diagnostic, and psychotherapeutic implications.

INTRODUCTION

Over the years, a number of studies have attempted to profile the characteristic personality or personalities of alcoholics. Although a number of personality disorders (i.e. anti-social personality, passive-dependent personality, explosive personality, etc.) have been extensively studied and associated with higher risks for the diagnosis of alcoholism (Cox, 1979), studies of the relationship of underlying personality and temperament, as such, to alcoholism, as well as to other substance-abuse/dependence disorders have occurred less frequently.

Nevertheless, some studies have shown alcoholics to have characteristic personality traits. Thus, alcoholics have been found to be relatively more passive, impulsive, sensation-seeking, dependent, anxious, psychopathological, and depressed (Barry III, 1974; Cox, 1979; Barnes, 1983). Several studies have evaluated the personalities of alcoholic patients using the five-factor model of personality, a model which divides personality into Neuroticism, Extroversion, Openness to Experience, Agreeableness, and Conscientiousness (Costa and McRae, 1992). These latter authors, using the NEO-PI, a five-factor scale, noted increased Extroversion in elderly individuals having alcohol problems. Also using the five-factor NEO-PI Scale, Martin and Sher (1994) noted that current alcoholics showed increased Neuroticism, lower Agreeableness, and lower Conscientiousness. Further dividing their sample, Martin and Sher (1994) found female alcoholics to be more neurotic and agreeable, when compared to male alcoholics. Co-morbidity with a mood disorder was associated with relatively greater Neuroticism and lower Extroversion, whereas co-morbidity with anxiety disorders was correlated with lower Agreeableness.

Several studies have suggested that pre-alcoholics, like alcoholics, appear more neurotic, impulsive, under-controlled, non-conforming, dominant, independent, active, aggressive, and anti-social (Barnes, 1983; Martin and Sher, 1994).

*Author to whom correspondence should be addressed.

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These studies generally did not exclude patients with antisocial personalities. In addition, Cloninger *et al*. (1988) have noted that the heritable childhood traits of high Novelty Seeking and low Harm Avoidance on the Tridimensional Personality Questionnaire (TPQ) were highly predictive of subsequent alcohol abuse. Schuckit (1983), using the Eysenck Personality Inventory, initially found no personality differences in non-alcoholic sons of alcoholics when compared to non-alcoholic sons of non-alcoholics. Later, however, at follow-up, Schuckit *et al*. (1994) did find that those who ultimately became alcoholics had been more Extroverted at baseline on the Eysenck Personality Inventory than those who did not (a finding which lost statistical significance when the Bonferroni correction was applied). Importantly, Schuckit (1983) and Schuckit *et al*. (1994) excluded all subjects who had a diagnosable anti-social personality.

One of the most common discrepancies between studies of underlying personality in patients with alcoholism is that some report increased Extroversion, and others report decreased Extroversion (increased Introversion) in their subjects. Since many alcoholic patients are depressed, and depression is often associated with Introversion (Akiskal *et al*., 1983), we postulated that whether or not a given alcoholic patient was also concurrently suffering from a mood disorder might discriminate between Introverted and Extroverted individuals respectively. The purpose of this study was to use the Myers–Briggs Type Indicator (MBTI), a widely used popular personality test, to profile the personalities of in-patient alcoholics (with or without a concurrent other substance-use disorder) who had or did not have a concurrent affective disorder diagnosis.

SUBJECTS AND METHODS

Subjects

The study subjects were 90 in-patient alcohol/substance-use disorder patients (i.e. patients who were admitted to the acute adult psychiatric wards of the University of North Carolina–Chapel Hill Hospitals). A final DSM-III-R diagnosis (American Psychiatric Association, 1987) was assigned at the time of discharge by the patients' in-patient psychiatrist. Most of the subjects were either unemployed or were working at relatively low income jobs. Subjects were divided as to whether or not they had a concurrent mood disorder. The subjects were divided into two groups; one included 50 alcohol/substance-use disorder patients [33 males, 17 females; mean age (± SD) was 39.5 ± 14.2 years] with an affective disorder, consisting of either major depressive disorder, bipolar disorder, dysthymia, or a diagnosis of another affective disorder (i.e. adjustment reaction with depression, schizo-affective disorder, etc.), and the other consisted of 40 patients (26 males, 14 females, aged 33.8 ± 7.4 years) who had an alcohol/substance-use disorder without an affective disorder (i.e. were 'pure' alcohol/substance-use disorder patients). Of the 50 subjects with an alcohol/substance-use disorder diagnosis plus an affective disorder, 25 had an alcohol-use disorder diagnosis plus one or more other substance-use disorder diagnoses (i.e. cocaine, cannabis, opioid, or polydrug dependence or abuse), 16 had an alcohol-use disorder diagnosis alone and nine had a substance-use disorder diagnosis without an alcohol-use disorder diagnosis. Of the 40 'pure' alcohol/substance-use disorder patients, 20 had an alcohol-use disorder diagnosis plus one or more other substance-use disorder diagnosis, nine had an alcohol-use disorder diagnosis alone, and 11 had a substance-use disorder diagnosis without an alcohol-use disorder diagnosis. A number of patients in both groups had an Axis II personality diagnosis in addition to the alcohol-substance-use disorder diagnoses as described above.

Materials

Each of the patients filled out a copy of the 166-item MBTI—Form F. The MBTI divides individuals into eight dichotomous preferences: Extroverted vs Introverted, Sensing vs Intuitive, Thinking vs Feeling, and Judging vs Perceiving (Myers and McCaulley, 1985). Extroverted individuals tend to relate to the outside world of people, whereas Introverted individuals relate to their own inner thoughts. Extroverts are sociable, interactive, externally oriented, enjoy multiple relationships, and are gregarious, whereas Introverts are internally oriented, intensive, territorial, enjoy limited numbers of relationships, are reflective, and are energy conservative. Sensing individuals deal with the concrete and the here and now, whereas Intuitive individuals tend to look toward future possibilities. Sensors tend to rely on experience, are realistic, hard-working, actually oriented, down

to earth, factual, practical, and sensible. Intuitives are future-oriented, trust hunches, are speculative, inspirational, ingenious, imaginative, fantasize, and are active. Thinking individuals prefer to use their cognitive processes to engage in decision-making, whereas feeling individuals relate to their relationships with others. Thinking individuals are thus objective, policy-oriented, legalistic, firm, impersonal, justice-oriented, analytical, and adhere to standards. Feeling individuals are subjective, intimate, use persuasion, are personable, humane, harmony-oriented, sympathetic, and devoted. Judging individuals enjoy coming to judgements and decisions rapidly. Perceiving individuals like to keep things open. Thus, Judgers are settled, decided, fixed, like to plan ahead, are decisive, believe in deadlines, and enjoy closure. Perceivers adapt as they go, like to keep their options open, are open-minded, are tentative, dislike deadlines, and have a wait and see attitude (Myers and McCaulley, 1985).

Data analysis

The alcohol/substance-use disorder patient groups with and without an affective disorder respectively were compared with each other and with normative data that were derived from a total of 55 971 individuals (32 731 females and 23 240 males) who had taken the MBTI—Form F (Macdaid *et al*., 1986). The MBTI was scored and data were analysed for the eight one-factor, 24 two-factor, and 16 four-factor personality preference and type distributions (i.e. Introverted, Introverted/Feeling, Introverted/Intuitive/Feeling/Judging) using the Selection Ratio Type Table (SRTT) computer program (Granade *et al*., 1987). This program uses χ^2 and Fisher exact tests to compare percentages of subjects in each group who fall into a given category. In addition, MBTI data can also be calculated as a continuum score measuring the degree of preference for the poles of a given dichotomy (i.e. a continuum from Extroversion to Introversion) as described by Myers and McCaulley (1985).

We compared the 'pure' substance-use disorder, the mood disorder/substance-use disorder and total subject groups with normative data (see above) and the 'pure' substance-use disorder group with the mood disorder/substance-use disorder group using the SSRT computer program (Granade *et al*., 1987). All results were rounded off to the nearest percentage. We also compared the continuum scores (Myers and McCaulley, 1985) of the 'pure' alcohol/substance-use disorder group with the alcohol/substance-use disorder group with co-existing affective disorder using a *t*-test procedure. Since the Centre for the Application of Psychological Type provides categorical data, but does not provide continuum scores for its normative data, we were unable to compare our alcohol/substance-use disorder group and subgroups with normative data using non-categorical comparisons.

All statistical tests were non-directional (two-tailed), with level of significance set at $\alpha = 0.05$. Because of the exploratory nature of the study, a Bonferroni correction for the number of analyses was not applied.

RESULTS

Total patient group–normative group comparisons

As shown in Table 1, individuals with Introverted, Sensing, Feeling, and Perceiving single-factor MBTI preferences respectively were significantly over-represented among the overall group of 90 alcohol/substance-use disorder patients, when compared to the normative population data. Individuals with Extroverted preferences were significantly under-represented, as were those with Intuitive, Thinking, and Judging preferences. As shown in Table 2, the overall patient group significantly more often consisted of Introverted/Perceiving, Sensing/Feeling, Sensitive/Perceiving, Feeling/Perceiving, Introverted/Sensing, and Introverted/Feeling two-factor types, relative to the normative population. Also, as shown in Table 2, Sensing/Thinking, Intuitive/Thinking, Intuitive/Judging, Thinking/Judging, Extroverted/Introverted, Extroverted/Thinking, and Introverted/Thinking two-factor types in the overall patient group were significantly under-represented, when compared to the normative population. With respect to four-factor MBTI types as shown in Table 3, a significantly greater percentage of the overall patient group was over-represented as being Introverted/Sensing/Feeling/Perceiving and Introverted/Intuitive/Feeling/Perceiving types, when compared to the normative population.

'Dual diagnosis' group–normative group comparisons

Table 1 compares the 50 'dual diagnosis' alcohol/substance-use disorder patients with an affective

Table 1. MBTI single-factor distributions of 40 'pure', 50 mood-disordered, and 90 total alcohol/substance-use disorder patients compared to normative data

Preference	Normative distribution (%) (n = 55 971)	'Pure' substance-use disorder (%) (n = 40)	Mood disorder–substance-use disorder (%) (n = 50)	Total subjects (%) (n = 90)
Extroversion (E)	54	63‡	26***	42*
Introversion (I)	46	37‡	74***	58*
Sensing (S)	56	72*	72**	72*
Intuitive (N)	44	28*	28*	28**
Thinking (T)	47	40†	16***	27***
Feeling (F)	53	60†	84***	73***
Judging (J)	60	50	38**	43**
Perceiving (P)	41	50	62**	57**

MBTI, Myers–Briggs Type Indicator.
*P < 0.05, **P < 0.01, ***P < 0.001, all comparisons with normative data.
†P < 0.05, ‡P < 0.001, all comparisons between 'pure' substance-use disorder and mood-disordered substance-use disorder patients.

Table 2. Two-factor MBTI type distributions in 40 'pure', 50 mood-disordered, and 90 total alcohol/substance-use disorder patients compared to normative data

	Normative population (%)	'Pure' substance-use disorder (%)	Mood disorder–substance-use disorder (%)	Total subjects (%)
I/P	18	23‡	50***	38***
S/T	28	28	10**	18**
S/F	25	45*	62***	54***
I/T	19	13	6*	9*
S/P	16	30*	38***	34***
E/J	31	35†	14**	24
I/J	21	8*	4**	6***
T/J	30	20	10**	14**
F/P	25	30†	56***	44***
E/I	26	13	8***	10***
I/S	27	23‡	54***	40**
E/S	29	50**,‡	18	29
E/T	25	28‡	4***	14*
I/F	23	25§	62***	46*
I/T	22	13	12	12*

Abbreviations are as in Table 1. No significant differences were noted for E/P, N/F, S/J, N/P, T/P, F/J, N/I, and E/F.
*P < 0.05, **P < 0.01, ***P < 0.001 comparing the sustance-use disorder groups with normative data.
†P < 0.05, ‡P < 0.01, §P < 0.001, comparing the 'pure' alcohol/substance-use disorder group with the mood-disordered and alcohol/substance-use disorder group.

disorder with the normative population with respect to single-factor preferences. 'Dual diagnosis' patients more frequently had Introverted, Sensing, Feeling, and Perceiving preferences respectively. As shown in Table 2, these 'dual diagnosis' patients, when compared to the normative population, were significantly more often Introverted/Perceiving, Sensing/Feeling, Sensing/Perceiving, Feeling/Perceiving, Introverted/Sensing, and Introverted/Feeling two-factor types. Conversely, they were significantly less often Extroverted/Judging, Sensing/Thinking, Intuitive/Thinking, Intuitive/Judging, Thinking/Judging, Extroverted/Intuitive, and Extroverted/Thinking two-factor types. 'Dual

Table 3. Distribution of alcohol/substance-use disorder patients among 16 four-factor MBTI types compared to normative data

Four-factor types	Normative distribution (%) (n = 55 971)	'Pure' substance-use disorder (%) (n = 40)	Mood disorder–substance-use disorder (%) (n = 50)	Total subjects (%) (n = 90)
I/S/T/J	10	2	6	5
I/S/F/J	9	8	16	12
I/S/T/P	4	5	2	3
I/S/F/P	5	8†	30***	20***
I/N/F/J	4	3	0	1
I/N/T/J	5	3	2	2
I/N/F/P	6	8	16**	12*
I/N/T/P	4	3	2	2
E/S/T/P	3	8	0	3
E/S/F/P	5	10	2	8
E/S/T/J	10	13	2	7
E/S/F/J	9	20*	10	14
E/N/F/P	10	5	4	4
E/N/T/P	5	5	2	3
E/N/F/J	6	0	2	1
E/N/T/J	6	3	0	1

Abbreviations are as in Table 1.
*P < 0.05, **P < 0.01, ***P < 0.001, comparing alcohol/substance-use disorder groups with normative data.
$^{\dagger}P$ < 0.05 comparing 'pure' alcohol/substance-use disorder group with mood-disordered alcohol/substance-use disorder group.

diagnosis' patients were significantly more often Introverted/Sensing/Feeling/Perceiving and Introverted/Intuitive/Feeling/Perceiving four-factor types, than were subjects in the normative group, as shown in Table 3.

'Pure' patient group–normative group comparisons

Table 1 compares the 40 alcohol/substance-use disorder patients without an affective disorder diagnosis (i.e. the 'pure' patients) with the normative population with respect to single-factor preferences. These 'pure' patients were generally very similar to the normative population, although they significantly more often had a Sensing preference. As shown in Table 2, they were significantly more often Sensing/Feeling, Sensing/Perceiving, and Extroverted/Sensing two-factor types, when compared to the normative population. The Intuitive/Judging two-factor type was significantly under-represented in the 'pure' substance-use disorder group. No differences between the 'pure' patients' group and the normative population existed with respect to the four-factor types, except for Extroverted/Sensing/Feeling/Judging (Table 3).

'Dual diagnosis'–'pure' patient group comparisons

Table 1 compares the 40 alcohol/substance-use disorder patients without an affective disorder (the 'pure' patients) with the 50 alcohol/substance-use disorder patients with an affective disorder (the 'dual diagnosis' patients). Significantly more 'pure' substance-use disorder patients showed Extroverted and Thinking single-factor preferences, and were significantly under-represented as having Introverted and Feeling preferences when compared to the 'dual-diagnosis' patients. In addition, as shown in Table 2, 'pure' alcohol/substance-use disorder patients were significantly more often Extroverted/Judging, Extroverted/Thinking, and Extroverted/Sensing types, and were significantly less often Introverted/Perceiving, Feeling/Perceiving, Introverted/Sensing, and Introverted/Feeling types, when compared to the 'dual diagnosis' patients. With respect to MBTI four-factor types, as shown in Table 3, 'pure' alcohol/substance-use disorder

patients were significantly less often the Introverted/Sensing/Feeling/Perceiving type than were those in the 'dual diagnosis' patient group, who had both an alcohol/substance-use disorder and an affective diagnosis.

Finally, we also compared our 40 'pure' alcohol/substance-use disorder patients without an affective disorder with the 50 'dual diagnosis' alcohol/substance-use disorder patients with an affective disorder, using a *t*-test procedure. We found that the 'pure' patients scored as significantly more Extroverted on the Extroverted to Introverted continuum ('pure' patients = 97.2, 'dual diagnosis' patients = 117.4, $t = -4.38$, d.f. = 88, $P < 0.0001$) and significantly more Thinking on the Thinking to Feeling continuum ('pure' patients = 102.3, 'dual diagnosis' patients = 113.4, $t = -2.63$, d.f. = 88, $P < 0.01$).

DISCUSSION

The above results may help clarify discrepancies which have appeared in the substance misuse literature concerning the underlying personality structure of alcoholics and/or other substance abusers. Significant differences in personality profiles, as measured by the MBTI, were noted between patients who had an affective disorder plus an alcohol/substance-use disorder and those who had only an alcohol/substance-use disorder but no affective disorder. Alcohol/substance-use disorder patients who had no affective diagnosis tended to have profiles which were quite similar to those found in the normative population.

Alcohol/substance-use disorder patients who also had an affective disorder had MBTI profiles very much like those we have noted in individuals who have an affective disorder not associated with an alcohol or other substance disorder. The affective disorder patients were comparatively over-represented as having Introverted, Sensing, Feeling, and Perceiving preferences, and were significantly over-represented as being Introverted/Intuitive/Feeling/Perceiving and Introverted/Sensing/Feeling/Perceiving types (Janowsky *et al*., 1998).

The above results may explain why some studies have shown alcoholics and other substance-use disorder patients to be predominantly Extroverted, whereas others have shown them to be Introverted. To our knowledge, only a few studies (Roszell *et al*., 1983; Martin and Sher, 1994) have differentiated subjects by whether or not an affective disorder diagnosis also existed. However, since chemically dependent individuals frequently have an affective disorder diagnosis, a differentiation by affective disorder status with respect to personality profiling appears warranted.

Our findings are similar to the results of several other investigators who have explored the underlying personality profiles of alcohol and substance-use disorder patients using the MBTI. Like our results with the overall patient group, Roszell *et al*. (1983) found that heroin addicts maintained on methadone were statistically more likely to be Introverted, to have a Sensing preference, and to be numerically more likely to have a Feeling preference. These latter authors did not measure Judging and Perceiving preferences. Interestingly, those heroin addicts who were introverted more often were found to have abnormal Minnesota Multiphasic Personality Inventory (MMPI) profiles. Roszell *et al*. (1983) also found Introverted/Sensing and Introverted/Feeling two-factor types to be predominantly composed of patients who had depression complaints and who saw themselves as physically ill. Patients characterized by MMPI data indicating isolation of affect, inappropriate behaviour, anxiety, chronic worrying, vulnerability to threat, and poor interpersonal relationships were more evenly divided among the various introversion two-factor subtypes, being Introverted/Sensing, Introverted/Feeling, as well as Introverted/Intuitive, and Introverted/Thinking types. Significantly, heroin addicts with normal MMPI profiles generally had an Extroverted preference. MBTI data from our overall patient group, like that of Roszell *et al*. (1983), showed an over-representation of alcohol/substance-use disorder patients who had Introverted, Sensing, and Feeling preferences. This finding was exaggerated in our alcohol/substance-use disorder patients with an affective disorder.

Emanuel and Harshen (1989) administered the MBTI to 3342 chemically dependent patients. As with our overall patient group, these authors found over-representation of Introverted, Sensing, and Feeling preferences. Unlike us, they did not find over-representation of the Perceiving preference. They found under-representation of Extroverted, Intuitive, and Thinking preferences. Their results showed commonality with ours in that there was significant over-representation of the Introverted/

Sensing/Feeling/Perceiving four-factor type and numerical over-representation of the Introverted/Intuitive/Feeling/Perceiving and the Introverted/Sensing/Feeling/Judging types. Their significant under-representation of the Extroverted/Intuitive/Thinking/Judging type was numerically concordant with our results, as was their and our concordance of Extroverted/Intuitive/Thinking/Perceiving, Extroverted/Intuitive/Feeling/Perceiving, Extroverted/Sensing/Thinking/Judging, and Introverted/Intuitive/Thinking/Perceiving types.

In another study of chemical dependency, using the MBTI, Dawes (1991) found that, for 1537 participants in a chemical dependency programme, similar to those in our patient group, their patients were over-represented as having Introverted and Perceiving preferences and under-represented as having Extroverted and Judging preferences. Concordant with our results, their Introverted/Intuitive/Feeling/Perceiving type was significantly over-represented, their Introverted/Sensing/Feeling/Perceiving type numerically over-represented, and their Extroverted/Intuitive/Thinking/Judging type numerically under-represented.

Finally, Bisbee *et al*. (1982) found a significant over-representation of substance-abuse patients with a Sensing preference. These results are concordant with ours. Differing from our results, Bisbee *et al*. (1982) found no overall significant over-representation of Introverted, Feeling, or Perceiving preferences, and indeed found numerical over-representation of patients who had Extroverted and Judging preferences. Numerical concordance of under-representation of Extroverted/Intuitive/Thinking/Judging, Extroverted/Intuitive/Feeling/Judging, Introverted/Intuitive/Thinking/Perceiving, Introverted/Intuitive/Thinking/Judging, and Introverted/Intuitive/Feeling/Judging types were also noted between our results and those of Bisbee *et al*. (1982). The results of Bisbee *et al*. (1982) more resembled those patients in our 'pure' alcohol/substance-use disorder group, who did not have an affective component to their illness. Significantly, Bisbee *et al*. (1982) created separate subgroups for bipolar, major depressive, and schizophrenic patients, and it is likely that these groups contained the majority of their 'dual diagnosis' patients.

Our study has certain limitations. First, the subjects were hospitalized in-patients. These individuals were generally admitted for an affective disorder-related reason, an alcohol/substance-use disorder reason, or both. A number had made suicide attempts and/or had seriously considered suicide and were admitted for that reason. Others were admitted primarily for short-term detoxification from substances of abuse. Therefore, our population may not represent the usual population of alcohol/substance-use disorder patients who seek treatment for their substance-related problems as such. Second, our subjects had MBTI profiles obtained while acutely symptomatic, and/or being detoxified. Although there is evidence to suggest that significant changes in MBTI preferences and types do not occur over time (Myers and McCaulley, 1985), and/or are not changed by mood states, the possibility exists that, as patients remit from their depression and/or alcohol/substance-use disorder, their profiles might change.

Clinically, our results may have therapeutic implications. For example, it may be useful to work with introverted patients in small groups, or on a one-to-one basis, rather than in conventional, relatively large self-help groups. Self-help groups often require considerable extroversion, and an ability to tolerate self-revelation, often a problem for introverts. In addition, much has been written about individuals with various MBTI personality profiles, and how these people relate to people with the same or other profiles. These books also describe the circumstances under which a given individual with a specific MBTI personality type is able to perform optimally. It may be that this knowledge, now generally applied to normal individuals, may be applicable to 'dual diagnosis' patients, alcoholics, and other substance-use disorder patients who are receiving treatment.

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